northern telecom

Model 3558 Manual Responder Unit

Maintenance and Calibration

1.0 General: This document has been assembled to serve as an aid in the calibration and service repairs of the Model 3558.

To assure the safety of the repairman and to prevent any damage to the unit, the power cord should always be disconnected before disassembly,, removal or insertion of circuit cards.

2.0 Display Check

A. Emergize unit and observe the word Pass in the left hand four segments of the display for a period of 5 seconds.

B. With the mode switch in the DP position, enter fifteen digits thru the keypad and observe them displayed.

C. Depress the clear button and observe the disappearance of the displayed digits, and displaying only the cursor lamp at the left.

D. Repeat steps B and C for TT and MF.

E. Move the mode switch to test and enter the digits 9001. The display should show as 90≡01. Depress the meas/sck button and observe a display of 90 □ 01.

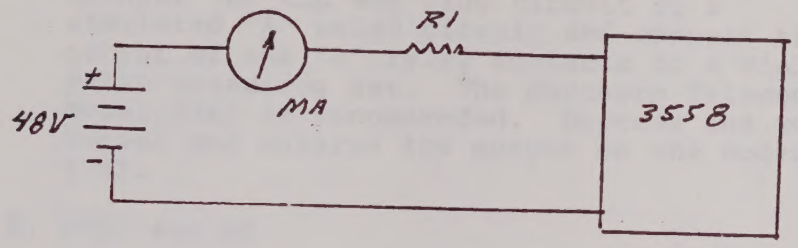
F. Depress the send button, observe the audio signal on the monitor speaker and also observe the self check value of 0.0 in the F→N display. Refer to section 7.0 if the reading is not 0.0.

G. Repeat steps E and F for test codes of 03, 04 and 05.

If the self check value does not show 0.0, refer to section 7.0.

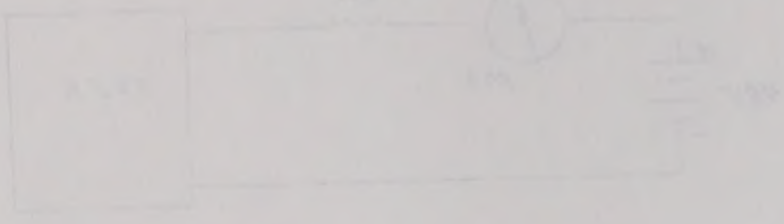
H) Repeat steps E and F for test codes of 02 and 06. If the self check does not show 0.0, refer to section 7.0.

3.0 Loop Current



Using the above circuit, the DC loop current should be as follows for each value of R1.

	R1	MA
3w	438 +/- 1	80 +/- 10
2w	1K +/- 10	40 +/- 5
1w	1.8K +/- 10	22 +/- 5



4.0 Outpulsing

A. Loop-Dial Pulse

With the mode switch in the DP position, enter the digits 1 thru 0 into the dialer memory. Connect the tip and ring circuit to a similated "A" relay circuit and connect the output of the "A" relay contacts to a dial pulse measuring set. The Northern Telecom Model 2763 is recommended. Depress the send button and observe the output on the Model 2763.

B. DTMF and MF

Repeat the above tests while outpulsing DTMF (TT) or MF into a DTMF or MF measuring set. The Model 2763 will perform these measurements and display the outpulsed number. Note that while using the Model 3558 in the MF mode, the unit will automaticaly send the KP and ST signals.

5.0 Test Tones

A. Connect the output of the Model 3558 into a 900 ohm terminating level measuring set. Set the mode switch on the 3558 to test and enter 90 ≡ 51. Depress send and observe 0dBm +/- .1dB on the level measuring set.

B. Change the test code to 90 ≡ 53, depress send and observe -16 dBm +/- .2 dB.

C. Repeat step B for test codes 54, 55 and 56.

D. If the level readings exceed the specified limits, adjust R25 on the transmit card.

6.0 Measure Level

A. Connect the output of a precision 900 signal generator into the line of the Model 3558. Adjust the generator to send 1.5 KHz at a level of 0dBm +/- .05dB. Set the mode switch on the 3558 to test, enter 90 ≡ 41 and depress send. The 3558 should display 0 +/- .1dB.

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B. Change the generator output to 404Hz at a send level of -16dB +/- .05. Change the test code on the 3558 to 90 ≡ 43 and depress send. The 3558 should display -16 =/- .2dB.

C. Repeat step B above using a frequency of 1.0 KHz for the two test codes of 90 ≡ 44 and 90 ≡ 45.

D. If the level measurement is incorrect, readajust R6 on the Receive Meas board.

7.0 Measure Level Self Check

Set the mode switch to test, enter 90 ≡ 01 and depress send. The F→N display should be 0.0. If this is incorrect, readajust R44 on the transmit card. Note that the tests in sections 5.0 and 6.0 must be completed before any adjustment can be made to R44.

8.0 Measure Noise

Connect a 900 ohm generator to the line input of the 3558 and adjust the generator to send a 1.5 KHz signal at -40dBm. Set the mode switch to test, enter 90 ≡ 42 and depress send. The F→N display should be 50.

Change the test code to 90 ≡ 46 and depress send. The display should be 50.

9.0 Operational Tests

Enter a 105 type far end test line number in the dialer memory, enter the proper line impedance TLP and test code and connect the unit to a telephone circuit.

Move the hook switch to Off Hook and observe dial tone on the monitor speaker.

With the mode switch in the proper dialing mode, depress the send switch and observe the unit outpulse the fetl number.

Observe the presence of a burst of test progress tone when the circuit is complete to the test line.

After the burst of TPT has ended, move the mode switch to test and depress the send switch. The unit will display the results of the test requested.

If the measurements appear to be incorrect, enter the self check code and repeat the tests. The unit should display 0 error in both F→N and N←F. Note: errors in the N→F direction are and indication of errors in the responder at the far end.

10.0 Power Supplies

A) Disconnect the power cord, remove the cover, remove the transmit card and reinstall the card on an extender card, (if one is available). After the power has been reapplied, the following voltages should be observed.

B) Using a DC voltmeter measure the following:

Pins 97&98 to pins 99&100 for +5.00 +/- .25V
Pins 95&96 to Pins 99&100 for +5.00 +/- .25V
Pins 93&94 to pins 89&90 for +15.00 +/- .75V
Pins 91&92 to pins 89&90 for -15.00 +/- .75V

C) Using a scope verify the ripple across each of the following:

Pins 97&98 to pins99&100 for 15mV max.
Pins 95&96 to pins 99&100 for 15mV max.
Pins 93&94 to pins 89&90 for 15mV max.
Pins 91&92 to pins 89&90 for 15mV max.

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